

REMARKS/ARGUMENT

This Amendment was prepared and filed in connection with the refiling of the application in the form of a Request for Continuing Examination (RCE) and in response to the Final Rejection issued August 2, 2005. A Petition for Extension of Time (two months) and the fee therefor are enclosed.

Consideration of the amendments to the claims is respectfully requested, inasmuch as the applicant has refiled the application as an RCE application.

The instant Office Action continues the rejection of claims 1-36 on grounds of obviousness over Kaiya (5,178,130), Chikama (4,710, 807) in view of Matumoto (5,434,615). Reconsideration is requested in view of the following remarks.

In claim 1, for example, there are included a timing signal generating circuit and a common phase adjustment circuit. The timing signal generating circuit, which is incorporated in the imaging apparatus, generates timing signals (used to drive the imaging device).

The common phase adjustment circuit adjusts the phases of the timing signals to compensate for signal delay occurring over a signal transmission line through which the imaging device is interchangeably linked and over which a signal is transmitted. The same phase adjustment circuit can be "commonly" used with different imaging devices, i.e. insertion units, and/or cables of different lengths because it can be adjusted to suit the parameters of the different devices and/or cables.

Most importantly, the instant claims are characterized in that the phase of the timing signal being supplied to the imaging device is pre-adjusted.

Respectfully, none of the three references relied on, namely Kaiya, Chikama and Matumoto, discloses such a combination of a timing signal generating circuit and a phase adjustment circuit.

At the outset, the distinction between an imaging signal drive signal, on the one hand, and a settling signal, on the other hand, must be elucidated. The drive signal of the present invention corresponds and represents that signal which is supplied to the imaging device to cause it to form

images. In contrast, the sampling signal or pulse, corresponds to a pulse that is used to sample the signal that is being outputted from the imaging device.

Thus, in the claimed inventions, the phase of the timing signal being supplied to the imaging device to acquire images is pre-adjusted.

In contrast, in the cited Matumoto reference, the face of the sampling pulse, which is utilized to sample the signal being outputted from the imaging device, is varied, which makes the disclosure of Matumoto quite different from the subject matter being claimed in the present application.

The sampling of the signal is performed according to a clock generated by the signal processing unit. Therefore, where, as in the reference, the face of the sampling signal is changed, there is a need to carry out the sampling while taking into account the face difference in advance, so as to ensure that the sampling coincides or is carried out according to a proper timing relative to the signal being outputted from the imaging device.

In contrast thereto, in the inventions defined in the instant claims, the face of the timing signal supplied to the imaging device is adjusted beforehand, which avoids the aforementioned drawback of the prior art. In fact, the cited reference does not even recognize, nor does it disclose a solution to the aforementioned problem.

As to the remaining references, Kaiya is narrowly focused with and concerns the issue of synchronizing RGBs of the two endoscopes which are used at the same time. As such, this reference fails to disclose or suggest a solution to the problem of "compensating for signal delay" which is at the heart of the problem that the instant inventors have tackled and solved in accordance with the features of the instant claims.

Chikama similarly fails to disclose or suggest anything concerning "compensating for signal delay" which the instant inventors have tackled and solved in accordance with the features and elements set forth in the instant claims.

Thus, none of the prior art of record, whether considered singly or in any combination, discloses or suggests the subject matter of the claims of the present application.

For completeness, it is noted that neither Kaiya nor Matumoto nor Chikama pay any attention to the task of adjusting the timing of timing signal which is utilized in the imaging device for driving the imaging device as recited in the instant claims.

In further response to the outstanding Office Action, it is noted that the Office Action states at page 5 that element 33a in Figure 1 of Kaiya is a phase adjustment circuit and refers the applicants to column 6, lines 38-52. Respectfully, the circuit block 33a shown in the figures of this reference does not contain a phase adjustment circuit. The words "adjusting phase" is mentioned in this reference only with respect to element 82 shown, for example, in Figure 4 and only with reference to adjusting the timing of motor drives. This has nothing to do with adjusting the timing signal for the imaging device *per se*. The synchronizing signal generating circuit 33a described in this reference serves to synchronize the timings of the reading signal to the SID 29a, the image signal and the illuminating period of R, G, B lights (R, G, B sequential lights) on the light source apparatus. There is no mention in this reference of the generating circuit 33a operating in conjunction with a phase adjustment circuit let alone a phase adjustment circuit, which somehow takes into account different cable lengths which can be interchangeably connected to the main imaging system. The text at column 6, lines 38-52 which the Office Action references mentions nothing about a phase adjustment circuit. The phase locked loop (PLL) circuit 82 does not control the timing of the signals used to drive the imaging device itself.

Insofar as Chikama is concerned, that reference is directed to an illuminating light supply system for an endoscope. The Office Action directs the Applicants to column 7, lines 38-40 of this reference. A phase comparing circuit 56 is described at Figure 2. It is part of the detecting circuit 50 shown in Figure 1 of this reference. These phase adjusting or detecting circuits are not coupled with any timing signal generating circuit used to drive an imaging device. It is simply irrelevant to speak of a phase detection or phase adjustment in a vacuum. Clearly, the prior art is aware of phase detecting or phase adjustment circuit. Here the issue is whether there is any disclosure in the prior art of a phase detection circuit that operates in conjunction with the timing signal generator circuit that is used to drive the imaging device and which allows adjusting the phases of the timing signals to compensate for transmission line delays which vary from transmission line to transmission line, which line can be interchangeably used with a given

endoscopic imaging system. Neither of these primary references teaches that feature of the invention.

The Examiner should be aware that phase adjusting as such, including phase locked loops, is described in the introductory pages of present application, namely at pages 1-3 thereof. For example, page 2 (at the lower half of the page) describes a related art document which uses phase information in sampling signals used to perform correlative double sampling. The phases can be adjusted according to the length of a cable. Thus, merely citing references that speak of phase detecting and phase adjusting circuits misses the point of the present invention and the fact that the instant specification itself discusses the prior existence of such circuits.

Accordingly, the Office Action actually turns to the last mentioned reference, Matumoto, and asserts that the reference discloses "the use of a phase-variable sampling pulse generator for adjusting the phases of the timing signals so that signal delays can be compensated over a transmission line," referring the Applicants to Figures 1 and 3, and to column 2, lines 39-47 of this reference. Before turning to that reference, the Examiner's kind attention is directed to the sentence that bridges pages 3 and 4 of the instant specification. That sentence reads as follows:

"In short, there is provided an endoscopic imaging system and an endoscope system having a video processing unit used in common among a plurality of solid-state imaging devices that are driven under different conditions because the solid-state imaging devices offer different numbers of pixels and that are used interchangeably." (emphasis added)

The sentence bridging pages 4 and 5 of the specification states:

"Even when the signal transmission line has different lengths, the phase adjustment circuit incorporated in the imaging apparatus linked to the signal transmission line precisely adjusts the phases of the driving signals output from the timing signal generation circuit."

Respectfully, the Matumoto reference does not contain the word "interchangeable" or "exchangeable" in reference to a plurality of solid-state imaging devices that can be interchangeably connected to the imaging apparatus, *per se*. In Matumoto, the phase-variable sampling pulse generator 19 is located in the operating portion 17 and that operating portion is shown in Figure 9 and its function is described at column 6, lines 50-60 where it is mentioned

that a cap 55 needs to be moved so that an adjustment of phase or the sampling pulse can be made "at the time of manufacturing an electronic endoscope". This appears to be a factory installed adjustment and there is no description of adapting that circuit to different insertion units or using it to accommodate interchangeable transmission lines which are used between the main body of the imaging system and the insertion units. In fact, there is no indication in this reference that the operating portion 17 is indeed a part of the main body of the electronic endoscope 14, which is to say that it can be disconnected from the optical member 16 of the imaging device. Since these components are not normally separable, this reference does not teach the use of a common phase adjusting circuit which can be used to adjust signal delays for different transmission lines that can be used interchangeably.

It is believed and respectfully submitted that the aforementioned comments are equally effective to address and reply to the rejection of claims 1, 18, 22, 26 and 30 on grounds of obviousness-type double patenting over claim 1 of Kaiya (5,178,130), in view of Chikama (4,710, 807).

These remarks apply to each of the independent claims in the application and necessarily therefore to all of the other claims which are dependent thereon. Accordingly, the Examiner is respectfully requested to reconsider the application, allow the claims as amended and pass this case to issue.

EXPRESS MAIL CERTIFICATE

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail to Addressee (mail label #EV606199396US) in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on January 3, 2006

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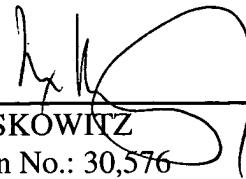


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January 3, 2006

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